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THE CLIMATE GROUP

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HEALTH AND CLIMATE CHANGE: EXPERT VOICE

In recent years, the international medical community has become increasingly concerned and vocal about the impact of climate change on our health. On the eve of the World Health Organization (WHO) Assembly in Geneva, where environment and pollution are on the agenda, we interview **Professor Paolo Vineis, Chair in Environmental Epidemiology, School of Public Health, Imperial College London**, to find out how health and climate are related and get his views on the opportunity of low carbon growth for a better, healthier, more prosperous future.

KEY POINTS

- Over the coming decades unchecked climate change is expected to exacerbate a host of existing health problems as well as create new ones.
- A range of climate pollutants, however, are already causing major health problems today as the leading cause of urban smog and indoor pollution.
- These problems and challenges place strains on public finances, in turn affecting health care standards that impact individuals, communities and businesses.
- By acting to reduce greenhouse gases today, governments and businesses can simultaneously avoid future health costs and the effect of today's climate pollutants on their citizens and workforces.
- Integrating health concerns into climate policies and low carbon business plans offers significant 'win-win' opportunities and benefits for society and the economy.

INTRODUCTION

In 2009, a report[1] from the eminent medical journal the Lancet concluded that climate change was the "biggest global health threat of the 21st century". For the first time, the link between how our actions are shaping both the environment and our own health made the headlines.

Today the medical community and research scientists are increasingly concerned about this link. The latest[2] Intergovernmental Panel on Climate Change (IPCC) report evaluated the largest to-date scientific assessment on the connection between climate change and human health, noting simply, but powerfully that "...the health of the human population is sensitive to shifts in weather patterns and other aspects of climate change".

Concluding with 'very high confidence' that "until mid-century, climate change will act mainly by exacerbating health problems that already exist", the IPCC report states climate disruption will cause both 'direct' and 'indirect' effects on human health. These effects arise from more intense heat waves, reduction in crop yields which worsen undernutrition, and more frequent flooding which increases food- and water-borne diseases.

[1]http://www.ucl.ac.uk/global-health/project-pages/lancet1/ucl-lancet-climate-change.pdf
[2]http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap11_FINAL.pdf

But the impacts are not just in the future. A range of greenhouse gas pollutants are already causing serious health problems. Non-CO_2 greenhouse gases such as nitrous oxide and tropospheric ozone, for example, as well as microscopic particulate matter from the burning of fossil fuels and biomass, are known to cause chronic respiratory and heart diseases. The WHO estimates that the air pollution caused by these pollutants was responsible for approximately 7 million deaths worldwide in 2012. [3]

Such climate related health impacts are first and foremost felt by individuals, particularly the poor, elderly and other vulnerable groups. But these impacts also have serious implications for communities and businesses as ill health adds cost to companies, health systems and families. This fact underlines why the health impacts posed by climate change resonates with so many people in ways that other climate issues haven't.

The realization of what is at stake is increasingly recognized by governments around the world, too. Last month, US President Barack Obama announced a White House Climate Change and Health Summit,[4] following a draft Climate and Health Assessment. And in China, Premier Li Keqiang promised to "fight with all our might" to tackle pollution[5], during the country's annual National People's Congress in March. The Premier's commitment was driven in no small part by public concern at the health costs Chinese citizens are now paying for the country's climate pollution.

For business and political leaders alike, understanding the health impacts of climate change will provide another reason – if one is needed – why bold action to cut emissions makes sense for the bottom line, risk reduction and maintaining prosperous, resilient societies.

INTERVIEW WITH PROFESSOR PAOLO VINEIS:

Photo credit: Imperial College London.

To help make sense of this important area of the climate change debate we spoke to global health and climate expert, Professor Paolo Vineis, Chair in Environmental Epidemiology, School of Public Health, Imperial College London (pictured left) to understand why health concerns should be an integral part of government and business action to address climate change.

WHAT ARE THE LINKS BETWEEN CLIMATE CHANGE AND HUMAN HEALTH?

There are several ways in which climate change can influence human health. Whereas we are certain that climate change is occurring and it is due to human activities, the links with health do not have the same degree of certainty – with some exceptions.

The first obvious link is heat waves. You certainly remember the heat wave that hit Europe in 2003, when tens of thousands of people died. In fact, these were premature deaths most of which would have occurred in any case and whose occurrence was anticipated for example in elderly people with chronic heart or lung diseases.

[3]http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/

[4]http://www.theclimategroup.org/what-we-do/news-and-blogs/obama-says-climate-change-is-threat-to-human-health/

[5]http://www.theclimategroup.org/what-we-do/news-and-blogs/china-premier-li-keiqiang-vows-to-crack-down-on-climate-laws-and-pollution/

Then there are other more indirect relationships between climate change and health, for example the changing distribution of some infectious diseases – in particular vector-borne diseases like malaria, dengue fever and others – where the habitat of the vectors changes. For example, there is good evidence that malaria has spread to places like Ethiopia highlands (at higher altitudes) or even places where it was not present before. This happens because the habitat for the anopheles [mosquitoes whose female population carries malaria, Ed.] has changed.

Another indirect effect is the one we are studying in Bangladesh at Imperial College. This project is related to the fact that the sea level is rising (for a number of reasons), by 1 to 4 mm per year or more. In the long run this creates problems: in Bangladesh – partly because of the sea level rise and partly through other mechanisms – there is intrusion of salty water into drinking water. There are hundreds of thousands of people who drink salty water in coastal Bangladesh, and are exposed to the risk of hypertension and other consequences of salinity.

Finally, there are some risks that are more difficult to predict – like the impact of climate change on crops, and therefore on health. For example, regarding the quality of crops, drought or floods – mainly in poor areas – affect the concentration of vitamins or folate in food. This can lead to health effects.

WE KNOW CLIMATE CHANGE AFFECTS HEALTH IN POOR AREAS. BUT WHAT ARE THE CONSEQUENCES FOR A LONDON OR NEW YORK CITIZEN? MAYBE AN EXACERBATION OF AIR POLLUTION?

Air pollution is mainly due to other causes, like traffic vehicles, industries and heating. However, climate change interacts with air pollution: typically, soot (black carbon) aggravates the increase in temperature due to greenhouse gases.

In addition, there is an interaction between temperature and pollution on human health, for example on the respiratory tract – such as chronic obstructive pulmonary disease, because of the interaction of different exposures. Sometimes, the overall effect is unpredictable. Scientists are now developing mathematical models to better understand the interaction between these two groups of determinants.

HOW BIG IS THE CLIMATE CHANGE THREAT FOR OUR HEALTH?

It depends on your point of view. If you look at the next 50 years, climate change is the number one problem for the planet – and the vast majority of scientists believes that. But probably this does not apply to its health effects. Human health may not be the main problem in the short run: it depends on the timescale you use. For example, I think that currently tobacco smoking and obesity are the biggest threats for human health, because both are spreading to developing countries. Obesity is no longer just a problem of rich countries, but is becoming a problem of low-income countries as well.

In the short run, like the next 20 years, I would say tobacco smoking and obesity are the big threats: but in the long run, say the next 50 years, climate change is becoming the biggest threat for humanity (for example for the water crisis).

HOW DIFFICULT IS IT FOR YOU, AS A SCIENTIST, TO COMMUNICATE THIS THREAT TO THE GENERAL PUBLIC?

People do not really perceive yet the importance of climate change – though in everyday life we all tend to attribute disparate events (such as changes in precipitations) to climate change. In fact, a causal link between what we can perceive with our senses and the reality of climate change is quite difficult to assess.

Thus, the perception of climate change is not necessarily correct. What are very likely to be correct are predictions made by scientists, that is what is going to happen in the next 50 years. This is a difficult message to transfer. CO_2 has reached a level (400 parts per million) that is almost corresponding to a tipping point, an irreversible situation – but this is a relatively abstract message for most people.

Better communication is a responsibility of the media, of governments, of industries. One of the main problems of the current situation is that unfortunately international organization, and also governments, are not very effective nor popular. For example, there is no international authority to address climate change. We are waiting for the Paris meeting and the related agreement. In fact some people perceive the meeting in Paris at the end of 2015 as the last chance we have, but there is no still world authority to implement their decisions.

Similarly, in the case of health, the World Health Organization (WHO) is potentially powerful, but it is much less so than it was in the past. We are facing a weakening of this kind of organization: they have less resources – as we have seen in the case of the outbreak of Ebola – and the public opinion and governments are not very supportive either. For example, in the 1960s and 1970s the WHO worked together with the governments of the Soviet Union and the United States: there was much support for the WHO, and they were able to defeat smallpox. But now very often there is little collaboration with local governments, as one can see in Syria where there is an epidemic of poliomyelitis (among other serious problems related to the war).

REGARDING HUMAN HEALTH, IS CLIMATE CHANGE PUSHED TO THE BACKGROUND BECAUSE IT IS NOT PERCEIVED AS AN IMMEDIATE THREAT?

This is exactly the situation, which is described very well in several books and articles about risk analysis and risk perception. Most people tend to put more weight on very serious, life-threatening risks which are immediate, rather than delayed and not life-threatening risks. For example, it was irrational that many people in the United States expressed concern about Ebola. There have been very few cases in Western countries. In general, rich countries are very well equipped to stop this kind of epidemic. Usually people do not express the same concern for the several thousands of deaths occurring every year due to car accidents.

The same happens for climate change. It is perceived as something disturbing, a nuisance, because people perceive weather has become unpredictable, but in fact climate change is not really treated as serious threat. This is because it is not immediate, and its consequences are in the long run and mostly indirect – except in poor countries. I have been in Bangladesh, where we have several work relationships with research institutions. There you can see the immediate effect of climate change – like erosion, floods, salinity in drinking water. This is also true in the northern states of India close to Himalaya, where there are massive floods.

WHAT CAN SCIENCE DO TO BE MORE PRESENT IN INTERNATIONAL CLIMATE CHANGE POLICY?

I think the only power we have is the power of dissemination of knowledge and persuasion, but there is also economic leverage. In the current world, if you can persuade politicians in particular that a measure is cost-effective, this is an additional powerful weapon. The problem with politicians is short-termism, i.e. they reason in terms of two or three years, just before the elections. That's why it is so difficult to persuade politicians. The argument of cost, however, is a good argument, because acting now reducing CO_2 in a substantial way would cost relatively little and would have a large number of benefits – including co-benefits like improving health. For example, increasing walking and cycling, and planning urban transportation in such a way that you reduce emissions from vehicles and improve people's physical exercise and health.

ACCORDING TO THE WORLD HEALTH ORGANIZATION, CLIMATIC CHANGES ARE ALREADY ESTIMATED TO CAUSE OVER 150,000 DEATHS ANNUALLY[6] AND ARE EXPECTED TO CAUSE APPROXIMATELY 250,000 ADDITIONAL DEATHS PER YEAR BETWEEN 2030 AND 2050.[7] HOW DO YOU COMMENT ON SUCH NUMBERS?

It is a figure frequently reported, but of course you should attach to it the degree of confidence you have in it – because it depends on the types of projections you make. If you stick to the current situation, there have been tens of thousands of deaths related to heatwaves and the impact of the heatwaves on elderly people – but we should also say that often these deaths are just anticipated by a few weeks. I am not saying they do not count, but it is not the same as malaria in a child. We should also weight the importance of these deaths in terms of years of life lost.

SO MAYBE POLITICIANS SHOULD RELY MORE ON SCIENCE TO AVOID THESE DEATHS?

Sure. I think also that this gives a big responsibility to the media: a very dangerous attitude is to put a lot of emphasis on acute, immediate, life-threatening risks and disregard the long-term risks. It is of course right to be concerned about Ebola, but it is not right to disregard climate change. However, Ebola is easily perceived because it is a dramatic disease, with people dying in the streets. In contrast, the effects of climate change are not easy to perceive, so they do not make the headlines (with the exception of the usual polar bear).

The other responsibility of the media is with the wrong idea of par condicio, that there are two opposite opinions about a problem and they should have equal representation in the media. I was shocked when I asked my students years ago to write a small project about tobacco smoking, and they came up with the idea that there are two opinions on the subject: some people claim that tobacco smoking is harmful and some people claim it is not! Something similar is happening with climate change.

In other words, you are supposed to leave to the citizens the responsibility of choosing between options, and this is the so-called 'freedom of choice' – very popular in the United States. This is completely wrong, because the citizens should be protected by the state from biased and inaccurate information, exactly as they are supposed to be protected from tricksters or ineffective or harmful drugs. The same goes for climate change. It is not about our opinions: scientists are there to discuss and compare facts and carefully collected observations. The best part of the scientific activities is related to their happening in a critical community: if you publish wrong or questionable observations they are likely not to be replicated by others, and sooner or later a consensus will arise from critical discussion.

In principle, what comes out of science is exposed to inter-subjective discussion and criticism, meaning it is much stronger than simple opinions. This is what I do not like in the media, that they present different versions of the same problem just as opinions, with little education to a critical appraisal of the evidence. The evidence for climate change is overwhelming.

BEYOND THE ROLE OF POLITICS AND MEDIA. WHAT CAN BUSINESS DO TO ADDRESS THE PROBLEM?

I am not an expert of this matter, but I think shifting towards green sources of energy can be quite rewarding. It can be the business of the future, but it needs an integration and cooperation between international organizations, state-led strategies, academy and the private industry. It is quite important that joint initiatives are taken between universities and industry to foster new research and translate research into new technologies and commodities. And this can be advantageous for universities, business and in the end, for citizens.

[6]http://www.who.int/heli/risks/climate/climatechange/en/
[7]http://www.who.int/mediacentre/factsheets/fs266/en/

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